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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,657	08/14/2001	Jon B. Korshus	0632/1G857-US2	, 3992

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EXAMINER

DEVI, SARVAMANGALA J N

ART UNIT	PAPER NUMBER
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1645

DATE MAILED: 06/27/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/930,657

Applicant(s)
Korshus et al.

Examiner
S. Devi, Ph.D.

Art Unit
1645



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 21, 2003
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-35 and 44-46 ~~is~~/are pending in the application.
- 4a) Of the above, claim(s) 44-46 ~~is~~/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-35 ~~is~~/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign-language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4 & 11 6) ☐ Other:

DETAILED ACTION

Applicants' Amendments

- 1) Acknowledgment is made of Applicants' amendments filed 08/14/01 and 09/17/02 (paper no. 2.5 and 3) and 01/13/03 (paper no. 8).

Election

- 2) Acknowledgment is made of Applicant's election filed 04/21/03 (paper no. 10), with traverse, of invention I, claims 33-35, in response to the restriction requirement mailed 03/20/03 (paper no. 9). Applicants' traversal is on the grounds that under the Office's examining procedures MPEP 803, if the search and examination of an entire application can be made without serious burden, the application must be examined even though it includes claims to distinct or independent inventions. Applicants acknowledge that inventions I and II define products with distinct biological properties, but contend that they do not warrant separate examination and searches. Applicants submit that a thorough search of the subject matter of claims 33-35 of invention I would necessarily include a search of the subject matter of the claims of invention II as 'they all involve the same antigen subunits from *Borrelia burgdorferi*'. Applicants state that the conjoint examination of inventions I and II would not present an undue burden.

Applicants' arguments have been carefully considered, but are not persuasive. In the instant case, the restriction requirement follows all appropriate statutes and regulatory principles and conforms closely with guidelines provided by MPEP, Chapter 800. With regard to burden, MPEP 803 states that restriction is proper between patentably distinct inventions where the inventions are (1) independent or distinct as claimed, and (2) a serious search *and examination* burden is placed on the Examiner if restriction is not required. As set forth in the restriction requirement mailed 03/20/03, invention I is directed to a combination vaccine comprising inactivated bacterin plus antigenic subunits derived from *B. burgdorferi* isolates. Invention II is drawn to an antigenic subunit vaccine which does not require the presence of an inactivated bacterin. The products are structurally, antigenically and immunogenically distinct from one another. Contrary to Applicants' statement that both inventions involve the same antigen subunits from *Borrelia burgdorferi*, it should be noted that the instant specification does not equate, by definition, the narrower term 'bacterin' with the much broader term 'vaccine'. Contrary to Applicants' contention, since the antigenic

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subunits of invention I are not required to be isolated, a search does not have to extend to the class that has been assigned to invention II. Furthermore, a search of class 424 would not yield all the relevant prior art on the subject matter of invention II. With regard to the burden of search and examination, MPEP 803 states that a burden can be shown if the Examiner shows either separate classification, different field of search or separate status in the art. In the instant application, a burden has been established by showing that inventions I and II are classified under separate classes and subclasses necessitating separate and non-coextensive searches of issued US patents. Applicants should note that divergent classification or subclassification has traditionally been utilized as one indicator that burden exists sufficient to warrant restriction. The classification system has no statutory recognition as to whether inventions are independent and distinct. For example, each class and subclass is comprised of numerous completely independent and distinct patented inventions. Further, it should be noted that the non-patent literature search, particularly in this art, is non-coextensive and burdensome. Clearly, different searches and issues are involved in the examination of each invention. For these reasons, the restriction set forth in the Office Action mailed 03/20/03 is proper and is hereby made FINAL.

Status of Claims

- 3) Claims 1-32 and 36-43 have been canceled via the amendment filed 08/14/01.
New claims 44-46 have been added via the amendment filed 01/13/03.
Claims 33-35 and 44-46 are pending.
Claims 44-46 are withdrawn from consideration as being directed to non-elected inventions.
See 37 C.F.R. 1.142(b) and M.P.E.P. § 821.03.
The elected claims 33-35 are under examination.

Information Disclosure Statements

- 4) Acknowledgment is made of Applicants' information disclosure statements filed 12/12/01, 07/09/02 (paper no. 5) and 04/21/03 (paper no. 11). The information referred to therein has been considered and a signed copy of the same is attached to this Office Action (paper no. 12).

Priority

- 5) The instant application is a Divisional application of application SN 08/722,013, filed 01/21/1997, now US patent 6,316,005, which is a national stage 371 application of

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PCT/US95/04455, filed 04/11/1995, which is a Continuation-in-part application of application SN 08/226,297 filed 04/11/1994, now abandoned.

Specification - Informalities

6) The specification is objected to for the following reasons:

(a) The amendment introduced to the first paragraph of the specification via the preliminary amendment filed 08/14/01 does not accurately reflect the current issued status of the prior application(s) as indicated above in italicized words under 'Priority'. Amendment to the first paragraph of the specification is requested.

(b) Tables in the instant application are not in a numerical order. For example, Table 6 is missing, or Tables 7, 8, 9, 11a, 11b, 12a and 12b of the instant specification are misnumbered. Correction is requested. The references to these Tables throughout the specification should be changed accordingly.

(c) The use of the trademark in the instant specification has been noted. For example, see page 58, lines 13, 21 and 25: "Tween-20". The recitation should be capitalized wherever they appear and be accompanied by the generic terminology. Each letter of the trademark must be capitalized. See M.P.E.P 608.01(V) and Appendix I. Although the use of trademarks is permissible in patent applications, the propriety nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Rejection(s) under 35 U.S.C. § 112, Second Paragraph

7) Claims 33-35 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite, for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

(a) Claims 33 and 34 are vague and indefinite in the recitation: "antigenic aubunits derived from", because it is unclear what is encompassed in the limitation "derived". Does "derived" mean isolated, purified, separated, extracted, or recombinantly expressed?

(b) Claim 34 has improper antecedence in the recitation: "each of the non-crossprotective Borrelia burgdorferi isolates' [Emphasis in original]. Claim 34 depends from claim 33 which identifies only one 'non-crossprotective' *Borrelia burgdorferi*, i.e., the second isolate.

(c) Claims 33-35 are vague and confusing in the recitation: "antigenic subunit", because it

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is unclear what is encompassed in this limitation. Is this a whole antigen; an epitope or a determinant of an antigen; a part or a fragment of an antigen, for example, lipid A portion of a lipopolysaccharide, or a specific domain of an antigen as in A or B subunit of an exotoxin?

Rejections under 35 U.S.C. § 102

8) The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9) Claims 33-35 are rejected under 35 U.S.C. § 102(e) as being anticipated by Flavell *et al.* (US 5,656,451).

The specification does not provide a closed definition for the limitation 'bacterin'. The specification does not define that 'bacterin' and 'vaccine' are one and the same. In the absence of a limiting definition within the instant specification, the term 'bacterin', as opposed to the much broader term 'vaccine', is given its usual art-recognized interpretation, i.e., a killed or inactivated bacterial cell preparation. The 'antigenic subunits' are interpreted to encompass isolated or non-isolated, purified or non-purified, and extracted or non-extracted antigens, or parts of antigens of *B. burgdorferi* isolates.

Flavell *et al.* disclosed a vaccine comprising formalin-killed bacteria (i.e., bacterin) expressing B cell epitopes (i.e., antigenic subunits) of various *B. burgdorferi* polypeptides along with a potent stimulator (i.e., adjuvant) such as, the flagellin protein of *Salmonella*. The preparation was used to immunize mice which were then challenged with *B. burgdorferi* (see paragraph bridging columns 35 and 36). Flavell *et al.* disclosed multicomponent vaccines wherein unicellular hosts express novel *B. burgdorferi* polypeptides (see second full paragraph in column 4; and lines 24 and 25 in column 33). The various *B. burgdorferi* polypeptide epitopes comprise B cell epitopes from one *B. burgdorferi* polypeptide and T cell epitopes from a different *B. burgdorferi* polypeptide (see first full paragraph

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in column 36). The isolates of *B. burgdorferi* from which antigenic subunits are derived include *B. burgdorferi* B31 (see column 24, fourth full paragraph), *B. burgdorferi* 25015 and other strains (i.e., isolates) of *B. burgdorferi* that are known to differ antigenically from strain N40 such that the composition has a broad spectrum of different antigens. Flavell *et al.* taught the non-crossprotective nature of *B. burgdorferi* isolates or their antigenic subunits by stating that the OspA of strain 25015 differs from OspA of strain N40 in that N40 anti-OspA antibodies protect against infection by N40, but are ineffective against infection with strain 25015 (see third full paragraph in column 15; and last full paragraph in column 2). The antigenic polypeptide subunits are expressed via eukaryotic and bacterial host cells (see last half of column 15). The composition of Flavell *et al.* is a multicomponent vaccine containing therapeutically effective amounts of the antigenic subunit polypeptides (see last two full paragraphs in column 13). Flavell's multimeric constructs comprise B and T cell epitopes (i.e., antigenic subunits) from 'multiple serotypic variants of *B. burgdorferi*, each variant differing from the other', and are particularly effective in the prevention and treatment of Lyme disease caused by a wide spectrum of different *Borrelia burgdorferi* isolates (see paragraph bridging columns 11 and 12; and column 12). Flavell's multicomponent vaccine is constructed to comprise multiple epitopes from 'several different *B. burgdorferi* isolates' to elicit antibodies that will confer protection against 'a variety of different strains' (see Example XVII), thus indicating that the isolates are non-crossprotective. The polypeptide antigenic subunits present per dose are 10 micrograms or 50 micrograms (see first paragraph under Example V). That the prior art formalin-killed bacterial preparation (i.e., bacterin) expressing various antigenic subunit polypeptides was necessarily present in an effective immunizing amount in a suitable carrier during immunization of mice is inherent from the teachings of Flavell *et al.* since it is well known in the art that vaccines are administered in a suitable carrier in amounts effective for immunization.

Claims 33-35 are anticipated by Flavell *et al.*

Objection(s)

10) The use of underlining in claims 33-35 is objected to. The underlining is intended to appear in the printed patent or is properly part of the claimed material, and is not intended to indicate amendments or changes in the claims. Under these conditions, future proposed amendments to the claims may not be made by underlining words added. See 37 C.F.R. § 1.121(d).

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Consistent with the practice of italicization of the bacterial names in the art of microbiology, it is suggested that Applicants replace the underlined recitation: "Borrelia burgdorferi" with --*Borrelia burgdorferi*--.

State of the Art

11) The prior art made of record and not currently relied upon in any of the rejections is considered pertinent to Applicants' disclosure.

- Purdy *et al.* (US 6,303,130) describe 'bacterin' as an alternative term to 'killed bacteria' (see column 4, lines 36 and 37).
- Smith (US 4,171,354) describes 'bacterins' to be synonymous or equivalent to 'a killed cell preparation' (see column 9, line 34).
- Chu *et al.* (US 2003/0017171) describe a 'bacterin' to be a bacterium harvest which has been inactivated to 'killed preparations of bacterial cells' (see section 0015).
- Ward *et al.* (US 2002/0165138) describe 'bacterin' to be synonymous or equivalent to 'killed preparations of bacterial cells' (see last two lines in column 3).
- Wichmann (US 4,746,613) describes 'bacterins' to be 'killed culture bacteria' (see column 2, line 23).

Remarks

12) Claims 33-35 stand rejected.

13) Papers related to this application may be submitted to Group 1600, AU 1645 by facsimile transmission. Papers should be transmitted via the PTO Fax Center located in Crystal Mall 1 (CM1). The transmission of such papers by facsimile must conform with the notice published in the Official Gazette, 1096 OG 30, November 15, 1989. The CM1 facsimile center's telephone number is (703) 308-4242, which receives papers 24 hours a day and seven days a week. The RightFax number for submission of before-final amendments is (703) 872-9306. The RightFax number for submission of after-final amendments is (703) 872-9307.

14) Any inquiry concerning this communication or earlier communications from the Examiner should be directed to S. Devi, Ph.D., whose telephone number is (703) 308-9347. A message may be left on the Examiner's voice mail system. The Examiner can normally be reached on Monday to Friday from 7.15 a.m. to 4.15 p.m. except one day each bi-week which would be disclosed on the

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Examiner's voice mail system.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Lynette Smith, can be reached on (703) 308-3909.

June, 2003



S. DEVI, PH.D.
PRIMARY EXAMINER